

ABSTRACT

An inexpensive, small, low-power consumption, wide-band, high resolution spectrum analyzer is provided as a listening device for throw-away applications such as surveillance that involve deployment of large numbers of battery-powered spectrum analyzer modules to detect a signal source such as two-way radio traffic. Power requirements are minimized by the utilization of only one chirp generator to elongate battery life while providing a high resolution result. In order to minimize power drain the spectrum analyzer includes a single compound-chirp Fourier Transform generator. The compound chirp generator is used in one embodiment with a surface acoustic wave, SAW, dispersive delay line in conjunction with a surface electromagnetic wave, SEW dispersive delay line. The compound chirp generator permits performing two spectrum analysis functions, one resulting in coarse resolution frequency bins, and the other resulting in refining the coarse resolution bins into fine resolution frequency bins for the high resolution required for signal recognition.